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Automobiles and Auto Manufacturing

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Soviet Union accelerated during the 1950's. Canada found itself in a significant position with its own nuclear program, which had begun during the 1940's in cooperation with Great Britain.

Wishing to ensure a monopoly over the nuclear industry and to centralize existing operations, the Canadian government of Prime Minister Louis St. Laurent created a new crown (government) corporation, the AECL, in 1952. Explicit in its creation was that its mandate would be for the development of the peaceful uses of nuclear energy.

In 1951, Canada already had developed a unique radiation cancer therapy, still in use in the twenty-first century. That research also included the development of nuclear reactors for peaceful purposes. Beginning in 1954, the AECL took a leading role in developing a nuclear reactor to help generate electricity. In 1962, power from this source went online in the province of Ontario for the first time. It also developed a research reactor in 1957.

Impact The AECL symbolized, especially in an era of heightened Cold War tensions, the possibility of the peaceful uses of nuclear power.

Further Reading

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Steve Hewitt

See also Atomic bomb; Atomic Energy Act of 1954; Canada and Great Britain; Cold War; Continentalism; St. Laurent, Louis.

■ Automobiles and auto manufacturing

In several important respects the automobile and automobile manufacturing proved to be at the heart of North American life during the 1950's. The decade was one characterized as the age of tail fins and chrome, and the automobile was recognized as something far more than ordinary transportation.

In the consumer-oriented society of the 1950's, the automobile became the ultimate status symbol, an object that was worshiped by some with a religious

intensity. The decade marked an age of excess expressed by style. As the 1950's unfolded, cars became longer, lower, heavier, more powerful, and as a result of these developments, more gasoline reliant. Moreover, unlike the late twentieth century, when cars, because of aerodynamic design considerations, appeared alike, every major car brand had its own look or profile during the 1950's. Children growing up during this decade became car spotters, distinguishing from considerable distances the differences between DeSotos and Chryslers and between Pontiacs and Chevrolets, playing close attention to the cars' distinctive grills, hood ornaments, or taillights. Indeed, for many Americans, inspired by car races and off-road excursions in, for example, the dry lakes of California, the automobile became a hobby, as reflected in such popular magazines as *Hot Rod*, *Motor Trend*, and *Road and Track*.

During the first half of the decade, in addition to the big three companies of General Motors (GM), Ford, and Chrysler, there were several independents, each with a distinctive style. Studebaker had broken away from conventionality in 1948 with Raymond Loewy's "coming and going" design. Packard was attempting to break into the middle-class market with a car that had a bulbous shape. J. Powell Crosley of Cincinnati manufactured a series of economy models despite the fact that the market was geared toward affluence. The Hudson Company pioneered the step-down, lowered-floor design that was coupled with a powerful Hornet engine, making its car a serious contender on southern NASCAR tracks. Nash produced a sporty hybrid Nash-Healy along with a passenger car that had the appearance of an inverted bathtub. Finally, Kaiser-Frazer came out with the economical Henry J, one version of which was sold at Sears Roebuck department stores but was considered ugly by many consumers.

Style The auto industry of the 1950's was dominated by its stylists. Prominent among them was Loewy at Studebaker, whose 1953 Starliner was a style *tour de force*. At General Motors, Harley Earl, inspired by the P-38 aircraft, added fins to the Cadillac during the late 1940's and adopted chrome as his design hallmark. Earl had an uncommon appreciation for the aesthetic value of glitter and chrome and developed a theory of "light value" of chrome trim. By angling beveling and then angling trim at 45 degrees, he was able to reflect light directly to the



Harley Earl, standing next to a full-scale model of a Buick sports car in 1951. General Motors' vice president in charge of styling, Earl was a major contributor to the revolutionary design changes of American automobiles during the 1950's. (Hulton Archive | by Getty Images)

viewer, and a maximum stylistic impact resulted. Along with Bill Mitchell, Earl headed a GM design studio that shaped two automotive icons of the 1950's, the 1955 and 1957 Chevrolets. Perhaps the most innovative of the stylists was Virgil Exner at Chrysler, who, in 1955, introduced the "forward look," a design concept that was perhaps best represented by the 1957 Plymouth. At Ford, Frank Hershey led the team that was responsible for the clean-lined 1955 Ford Thunderbird and the Fairlane Crown Victoria, as well as the four-passenger 1958 Thunderbird.

During the 1950's, automobiles changed not only in shape but also in color, as two- and even three-tone paint schemes became popular. Moreover, thanks to innovations in paint technology, colors became more vibrant and varied. For example, in 1955, Ford offered such unique colors as Regency Purple Iridescent and Tropical Rose, and Oldsmobile enticed customers with Turquoise Iridescent and Bimini Blue Iridescent.

Technology Just as the appearance of automobiles was dramatically altered, so too were the foundational technologies. For much of the 1950's, Detroit manufacturers engaged in a horsepower race, a competition that began with the introduction of the Oldsmobile Rocket V-8 engine in 1949. Gradually six and straight eight engines were displaced with overhead V-8 designs. At Chrysler, hemispherical chambered V-8's, known as "hemis," gained in popularity. In 1955, Chevrolet introduced its small block V-8, quickly a favorite among the hot-rod crowd. By the year 1956, some 80 percent of buyers purchased cars with V-8's, perhaps appropriate given that during the same year the interstate highway system became a reality. Although the Automobile Manufacturers Association banned factory-sponsored racing and discouraged the preoccupation with speed in auto advertising in 1957, horsepower and engine size continued to escalate through the early 1960's.

Concurrently, automatic transmissions became increasingly popular with consumers, including

push-button, on-the-dash versions in Chrysler products. In fact, the interiors of automobiles began to be filled with homelike conveniences. Power windows and plush seats, outside mirrors, automatic dimming headlights, transistorized radios, and air conditioning were now options in higher-priced models by mid-decade.

The Consumer Market Within the car industry, 1953 marked an important turning point. Between 1946 and the end of the Korean War in 1953, there were far more buyers than cars, and thus dealers could charge full prices for autos with already inflated price tags as a result of the addition of costly accessories. In 1953, an average American had to work thirty weeks to buy a new car, as compared to thirty-seven weeks in 1925. Consequently, 59 percent of consumers bought their automobiles on credit. Beginning in 1954, however, the tables were turned as it became a buyers' market. Dealers were now squeezed by manufacturers, who unloaded excess inventories with the threat of taking away the franchise from those dealers who did not comply. As a result, unscrupulous sales methods were practiced on a public already wary of dealers' honesty. Suspect practices included high-pressure sales tactics, inflated charges for dealer preparation, high interest rates, bait-and-switch tactics, and "unhorsing" the customer, whereby the prospective buyer found it difficult to get his or her old car back after appraisal.

These abuses and others led to widespread hostility on the part of the public, ultimately leading Congress to pass the Automotive Information Disclosure Act in 1958, which required the attachment to each new car of a sticker that informed customers of the price for each option and total retail price for the vehicle. Not surprisingly, by the late 1950's, critics of the automobile and Detroit manufacturers surfaced, including John Keats, who, in 1958, published *Insolent Chariots*. According to Keats, industry leaders had lost touch with American consumers.

The decade so simplistically characterized as one of "happy days" ended on a turbulent note. In 1957 and 1958, America experienced a short but painful recession, during which unemployment reached approximately 7 percent. It was during this downturn that Ford introduced the ill-fated Edsel, Packard ceased production, and car sales dropped more than 30 percent for the model year. However, Detroit manufacturers continued to build large, heavy,

and expensive-to-operate cars, ignoring the fact that import model sales were up tenfold from 1951. Volkswagen, Volvo, Renault, Fiat, MG, Triumph, and Austin were all making inroads into the American market. In response, in 1959, Detroit automakers released models with features such as upward-soaring tail fins (like those found on the Cadillac), outward extensions on the Chevrolet, and a delta wing design on the Buick. After only one year of record import sales did the big three manufacturers counter with economy cars—the Corvair, Falcon, and Valiant.

Safety Issues Until the 1950's, little attention was paid to the problem of automobile safety in the United States. The typical American automobile featured dashboards with numerous hard protrusions, the absence of seatbelts, poor brakes and tires, noncollapsible steering columns, doors that opened on impact, seats and suspension systems that were too soft, and windshield glass that shattered easily. This neglect was the consequence of manufacturers' hubris, consumer preferences, the psychology of driving, and the failure of government to further public interest in this matter.

Perhaps not surprisingly, more than 30,000 Americans died as a result of traffic accidents in 1950, and that number increased to more than 50,000 two decades later. However, despite obvious evidence to the contrary, the auto industry maintained that it was not automobile design features but drivers and their behaviors that caused accidents and injuries. Nevertheless, several forces for change began to converge during the late 1950's and early 1960's. Indeed, by the end of the 1960's, a once-thought unsailable industry was forced to change by the rising tide of public opinion, regulatory legislation, and a newly created federal government bureaucracy.

A major reason for the emerging emphasis on auto safety during the 1950's came as a result of enhanced technical knowledge about the "second crash"—the collision of the automobile's passengers with the interior after initial exterior impact. War-time studies done at Wright-Patterson Air Force Base and the Cornell University Medical College in New York on aircraft cockpit injuries were subsequently extended to an examination of similar phenomena inside automobiles at the Cornell Aeronautical Laboratory. Evidence from these studies, coupled with the work of Detroit plastic surgeon Claire Straith on passenger injuries, clearly suggested that relatively

simple design modifications could save lives and prevent serious injuries. However, in 1955 and 1956, when the industry was confronted with these facts, it largely failed to respond.

Similarly, change was in process regarding the environmental impact of automobiles. In 1959, the Automobile Manufacturers Association announced that in 1961, cars sold in California would have a crankcase ventilation device. It was hoped that manufacturers could head off government intervention, but the election of 1960 and the presidency of John F. Kennedy signaled increased government intervention, and the auto industry's complacency was soon forced to change.

Impact The 1950's witnessed the emergence of automobile in the United States, as the car moved to the center of culture and society. Economically, approximately one out of every seven Americans owed his or her job directly or indirectly to the automobile, as the glass, rubber, petroleum, and steel industries were all fueled by the manufacture of automobiles. Furthermore, the automobile figured prominently in the advertising, literature, music, and film of the decade. In 1957, Jack Kerouac published his life-as-journey account, *On the Road*, while noteworthy cinema of the decade featured automobiles in the backdrop, including James Dean's *Rebel Without a Cause* (1955) and James Mitchum's *Thunder Road* (1958). Indeed, the automobile was the quintessential technology of mid-century America, and it touched virtually every area of everyday life.

Further Reading

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John A. Heitmann

See also Affluence and the new consumerism; Chevrolet Corvette; Chrysler autoworkers strike; Drive-in theaters; Edsel; Fast-food restaurants; Ford Thunderbird; General Motors; Interstate highway system; Motels; Trans-Canada Highway; Volkswagen.

■ Avro Arrow

Identification Canadian-designed jet interceptor

Dates Test-flown on March 25, 1958

The Canadian-made Avro Arrow had the potential to become the greatest jet fighter-interceptor of its day, but the government of Prime Minister John G. Diefenbaker canceled the project.

In April, 1953, the Royal Canadian Air Force (RCAF) established requirements for a new and highly sophisticated jet interceptor to replace its aging, subsonic CF-100 fighters. Such an aircraft would have to fly at twice the speed of sound, have an operational ceiling of 58,000 feet, and employ state-of-the-art missiles and fire-control systems to facilitate its role as a bomber destroyer. An estimated six hundred machines were considered necessary to protect North America from attack by Soviet aircraft flying over the North Pole.

The RCAF established rigid specifications for the project, and by 1957, the firm of Avro Canada had finalized design of the CF-105, unofficially known as the Arrow. The Arrow was a large delta-winged fighter, powered by twin turbojet engines. The first Arrow was test-flown on March 25, 1958, and it stunned the aviation world with its many sterling qualities. In fact, this aircraft placed Canada at the forefront of military aircraft design and was considered a source of national pride. However, the plane also experienced problems and was viewed by the Conservative government of Prime Minister John G. Diefenbaker as prohibitively expensive. On February 20, 1959, Diefenbaker summarily canceled the entire project and ordered the five prototypes destroyed.

Impact Beyond depriving Canada of one of the world's great aircraft, the Arrow's demise solidified perceptions that Diefenbaker was soft on defense matters and contributed to his eventual defeat at the polls. Moreover, despite the Diefenbaker administration's attempts to distance Canada from the foreign policies of the United States, the cancellation